Function Points in Brazil

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Agenda

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- History
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  - **The COCOMO II Model**
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  - **The Productivity Approach**
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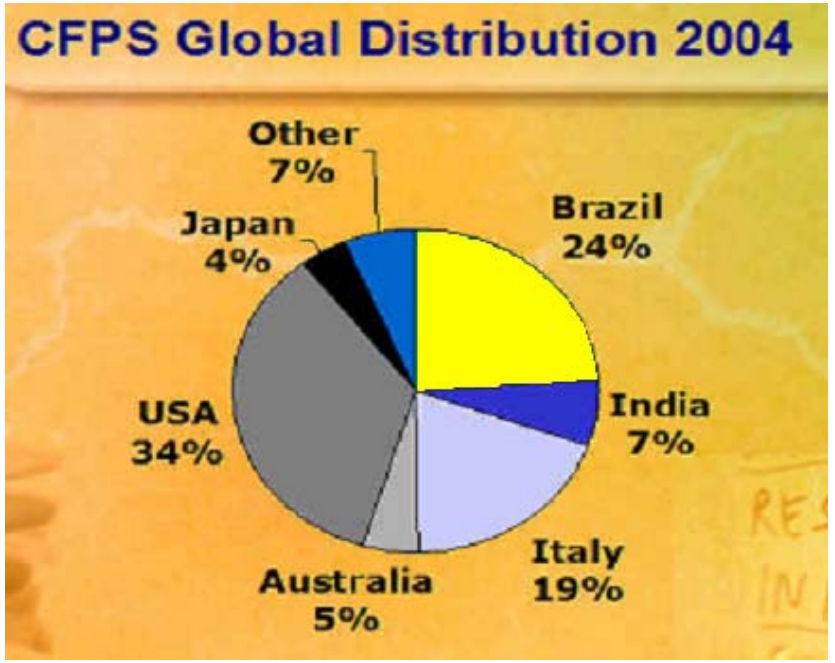
  - **Scope Management**
  - **Cases**

Introduction

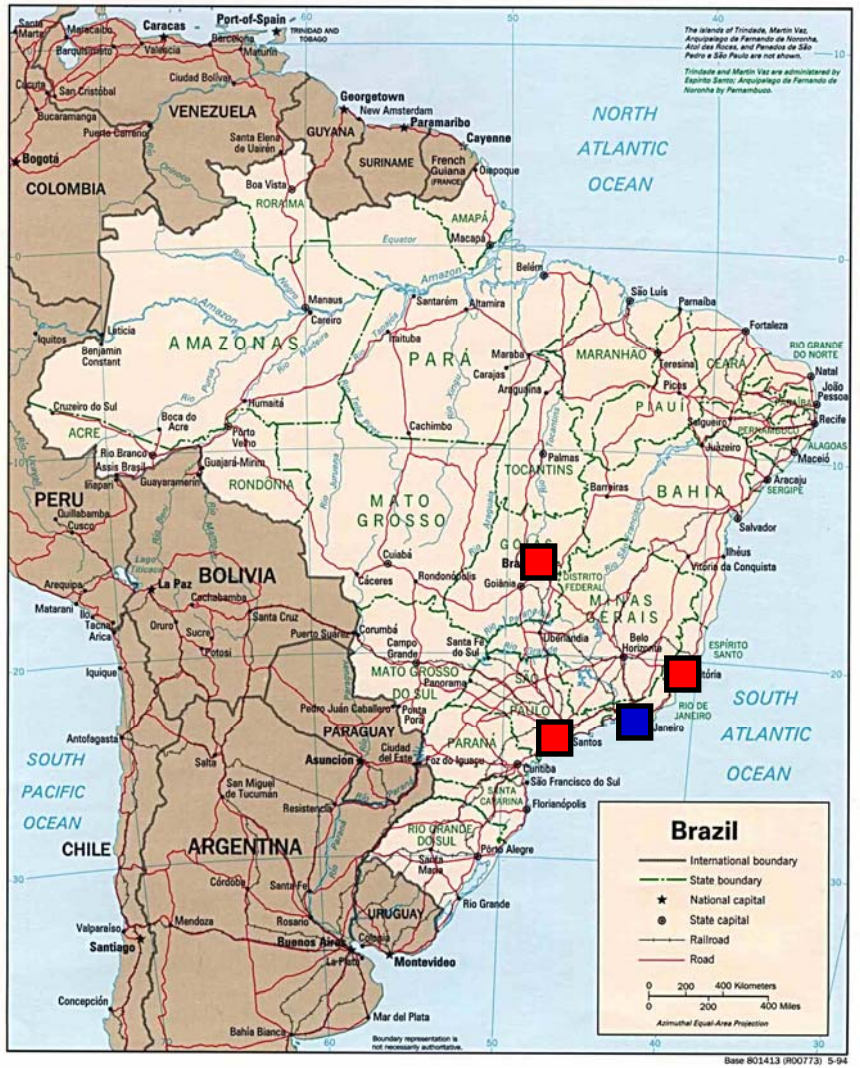
Introduction
Brazil - Number 2 in the FP World



Introduction
Brazilian CFPS Exam Sites

BFPUG (Rio)

CFPS Exams



History

The First Wave

- 1983 - First FPA course in Brazil (UNISYS)
- 1991 - First Brazilian FPA User Conference
- 1992-1996 - 7 more user conferences
- 1996 - First CFPS exam in Brazil (3 CFPS)

The Second Wave

- BFPUG founded in 1998
- CFPS exams in 2001, 2002, 2003, and 2004
- Number of CFPS approaches 200

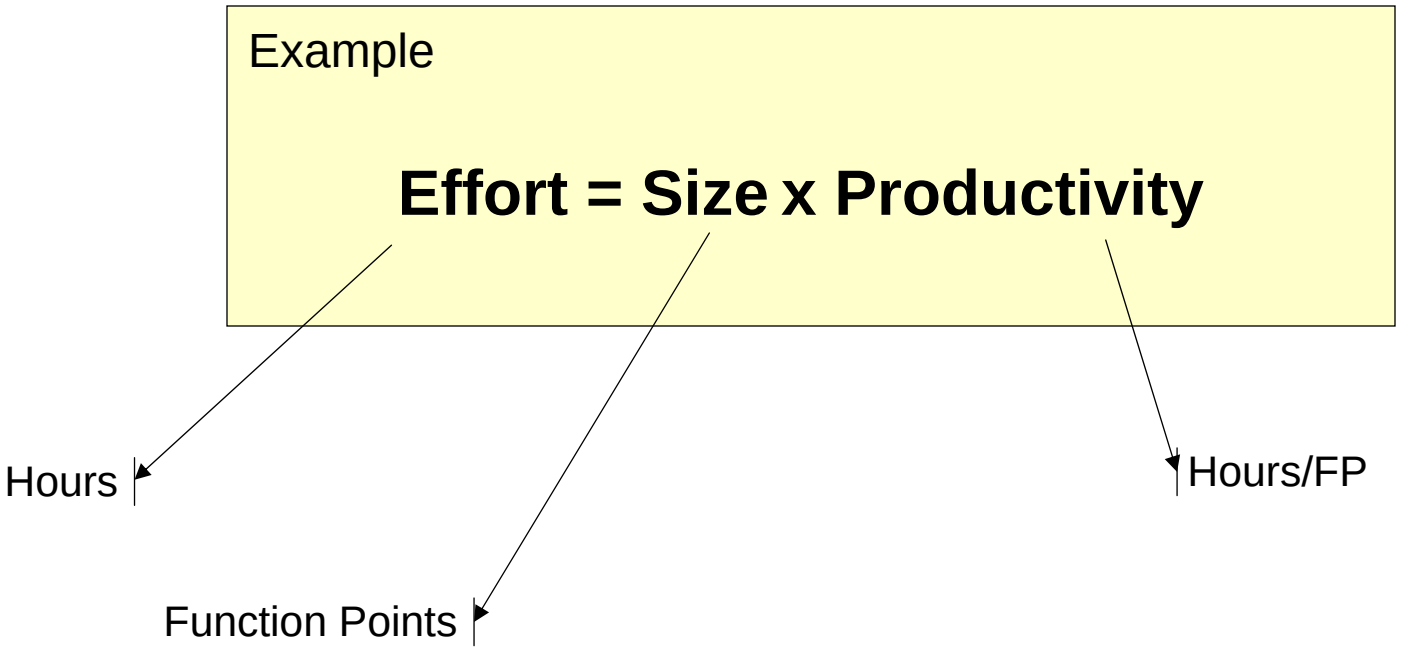
Function Points in Estimation

The Productivity Model

- Simple relationships based on local historical data
- Should be used to simplify the process and not because of a lack of knowledge
- Assumes that performance factors do not change among past and future projects
- Assumes constant, linear relationships

The Productivity Model

- Not applicable outside of the organization and domain that provided the data



The COCOMO II Model

- COCOMO II has 22 parameters (5 exponential and 17 linear) that may be adjusted according to the characteristics of a particular project.
- COCOMO was originally created by Barry Boehm in 1981.
- The current version, COCOMO II, was released in 2000.

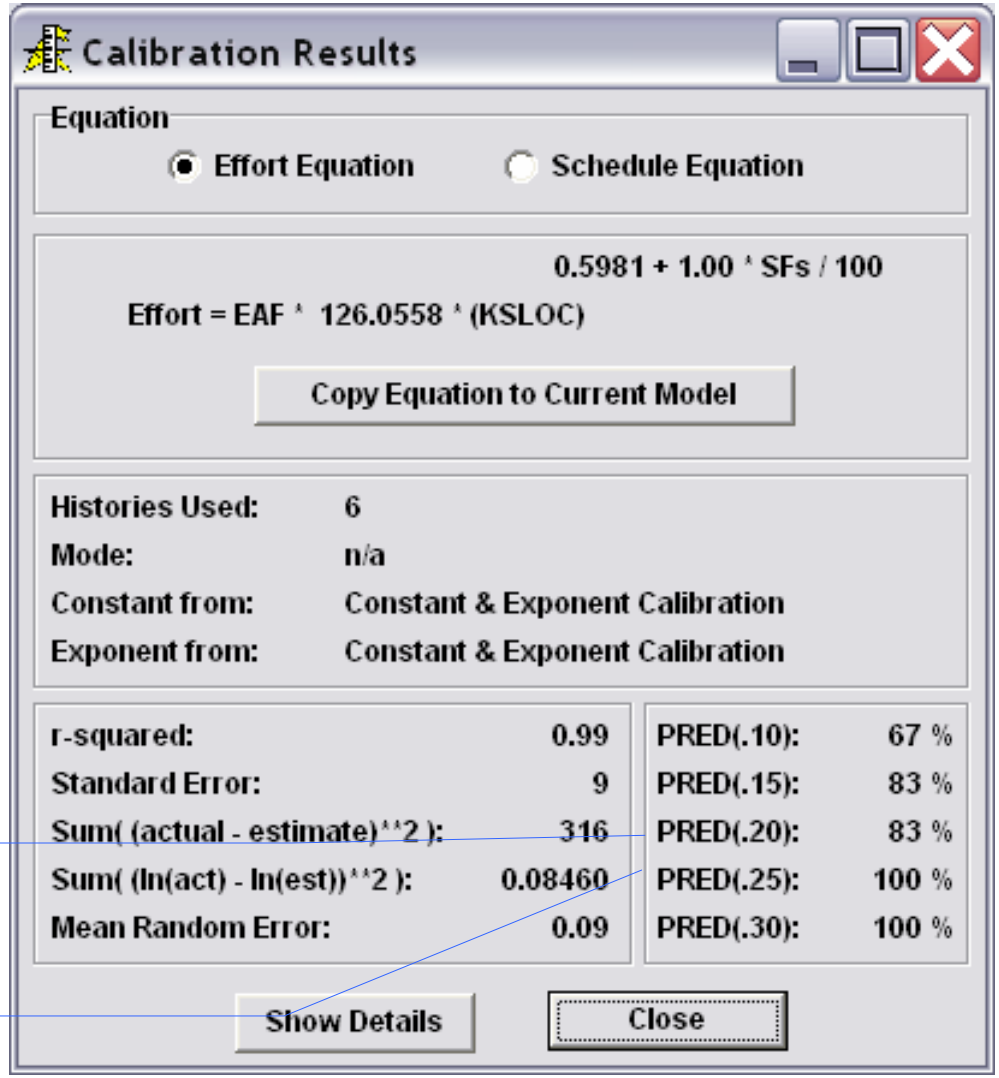
The COCOMO II Model

- Over 2,000 candidate projects were filtered to get the **161** projects used to calibrate COCOMO II.
- Before being used, COCOMO II should be locally calibrated to the organization's historical data.
- The USC free software tool may be used to locally calibrate COCOMO II
- An alternative free calibration tool is CALICO from SoftStar Systems.

The COCOMO II Model
Government Bank - 6 projects

- A Brazilian bank needed to estimate effort and schedule for a 1400 PF project.
- 6 similar completed projects were identified.
- All projects used Java technology.
- COCOMO II was calibrated to the 6 projects.
- The free CALICO tool was used in the calibration. (http://www.softstarsystems.com)

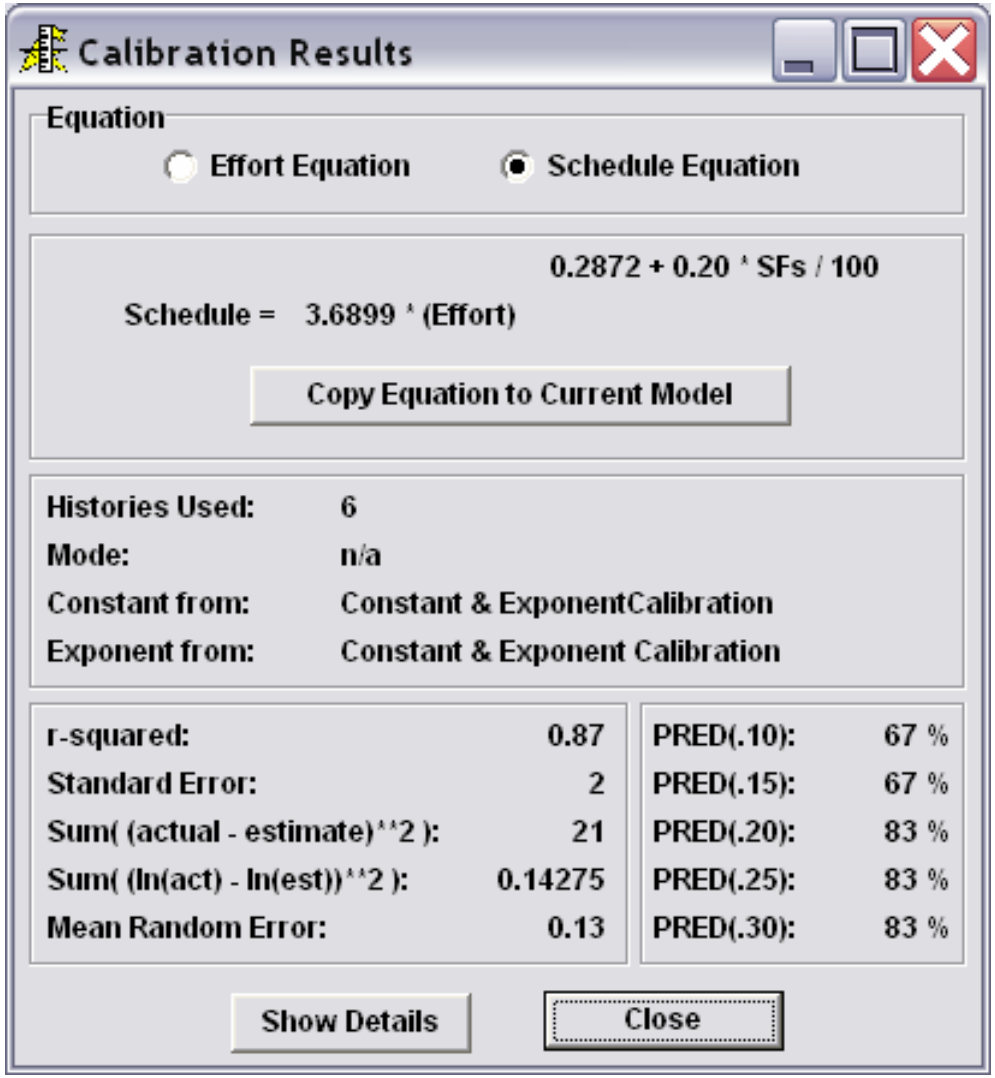
The COCOMO II Model
Government Bank - 6 projects



83% of projects had error <= 20%

100% of projects had error <= 25%

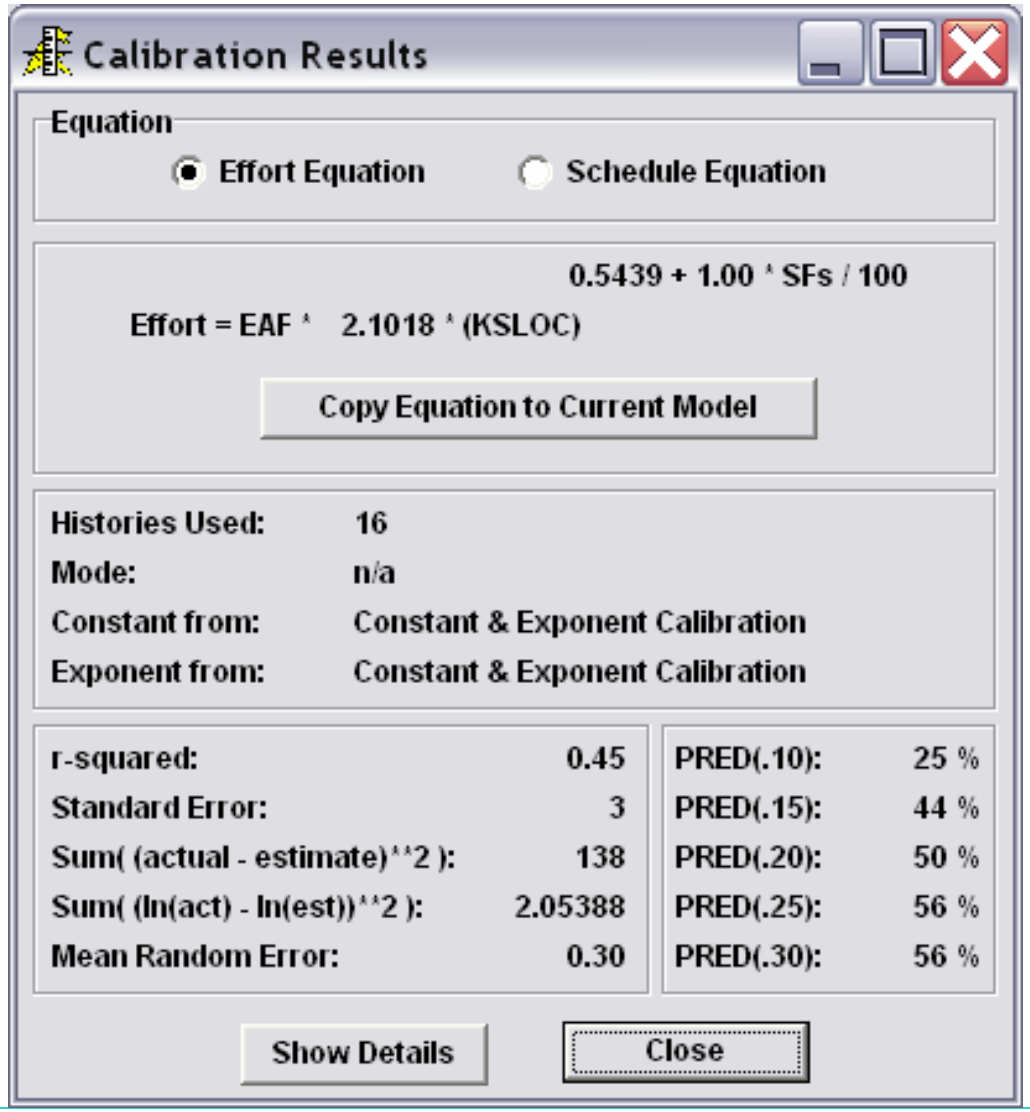
The COCOMO II Model
Government Bank - 6 projects



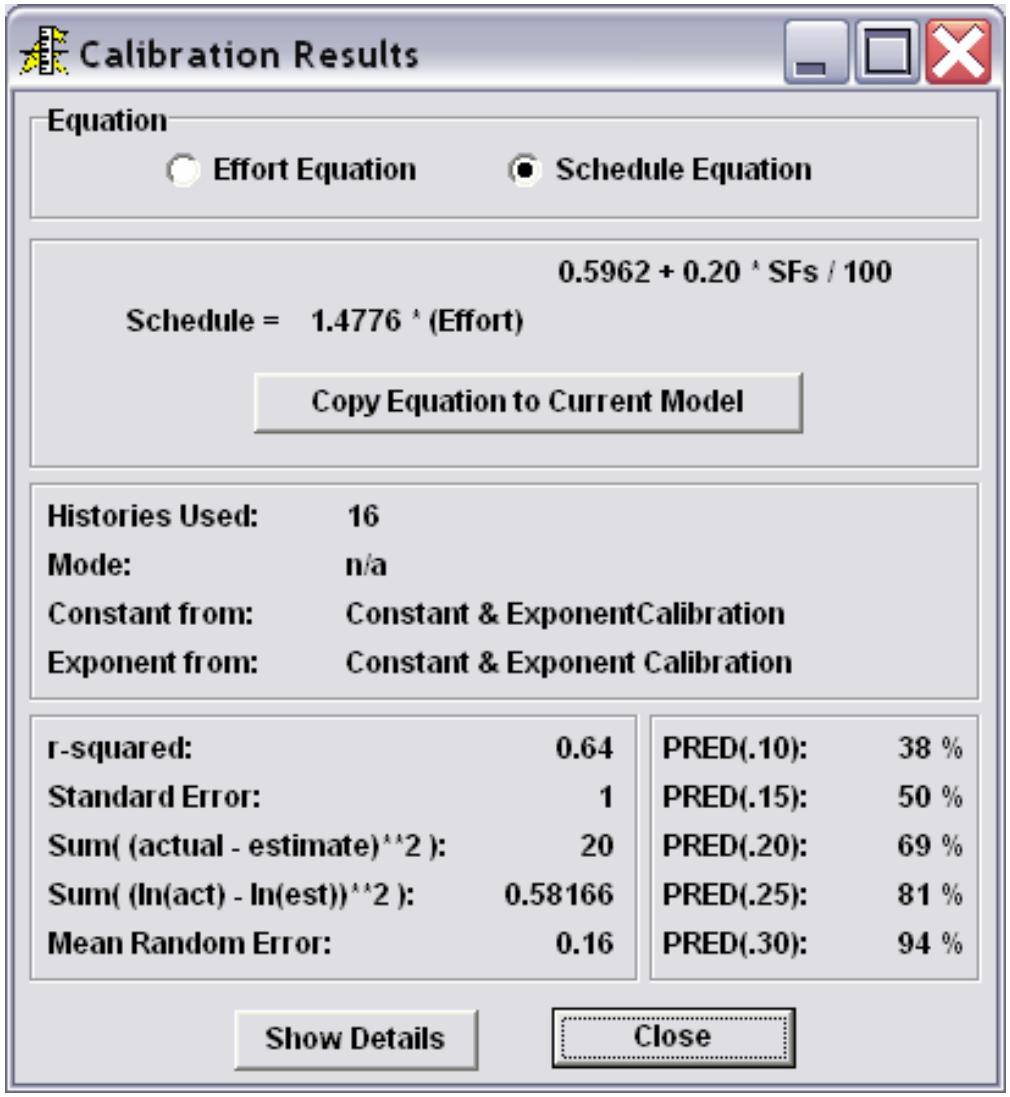
The COCOMO II Model
Government Service Organization - 16 projects

- The organization needed an estimation process.
- Web projects were a priority.
- All projects used Cold Fusion technology.
- 16 similar completed projects were identified.
- COCOMO II was calibrated to the 16 projects.
- The free CALICO tool was used in the calibration. (http://www.softstarsystems.com)

The COCOMO II Model
Government Service Organization - 16 projects



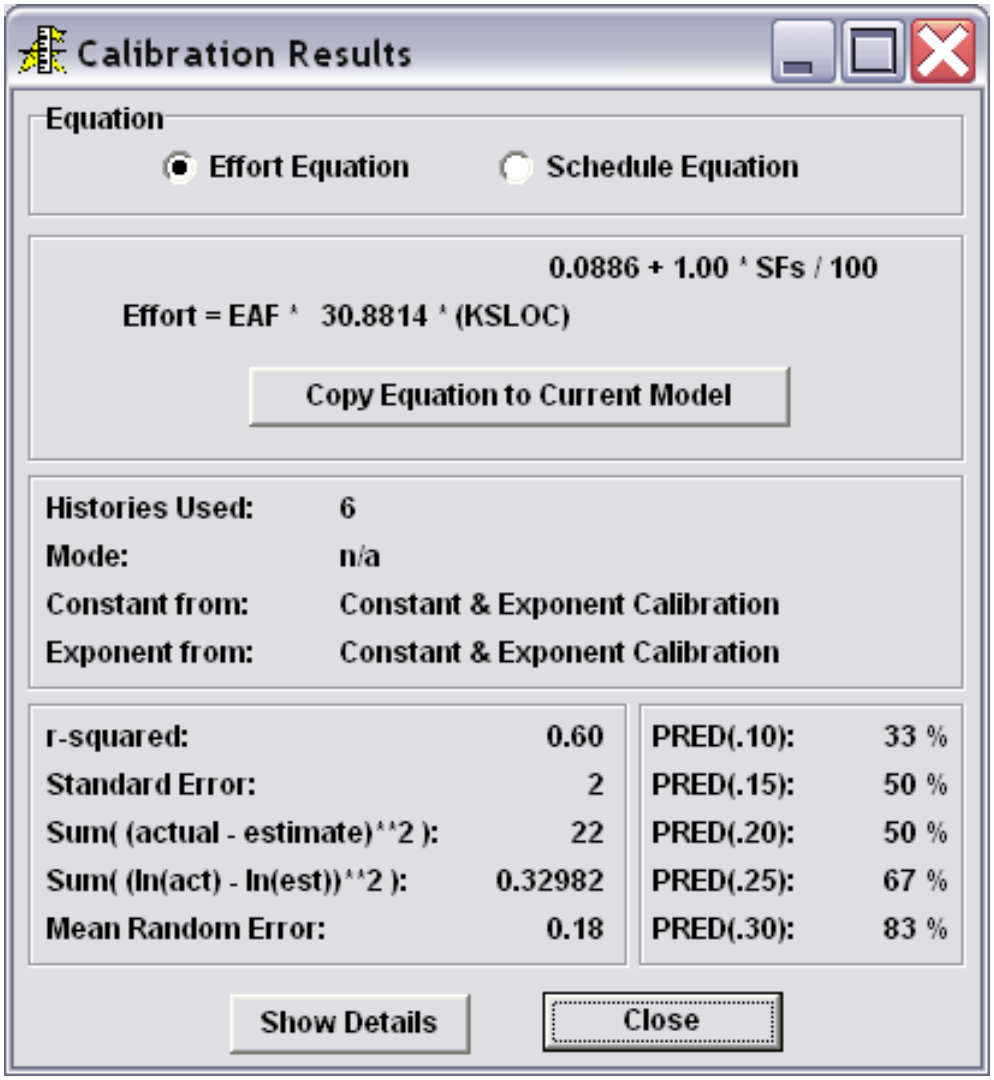
The COCOMO II Model
Government Service Organization - 16 projects



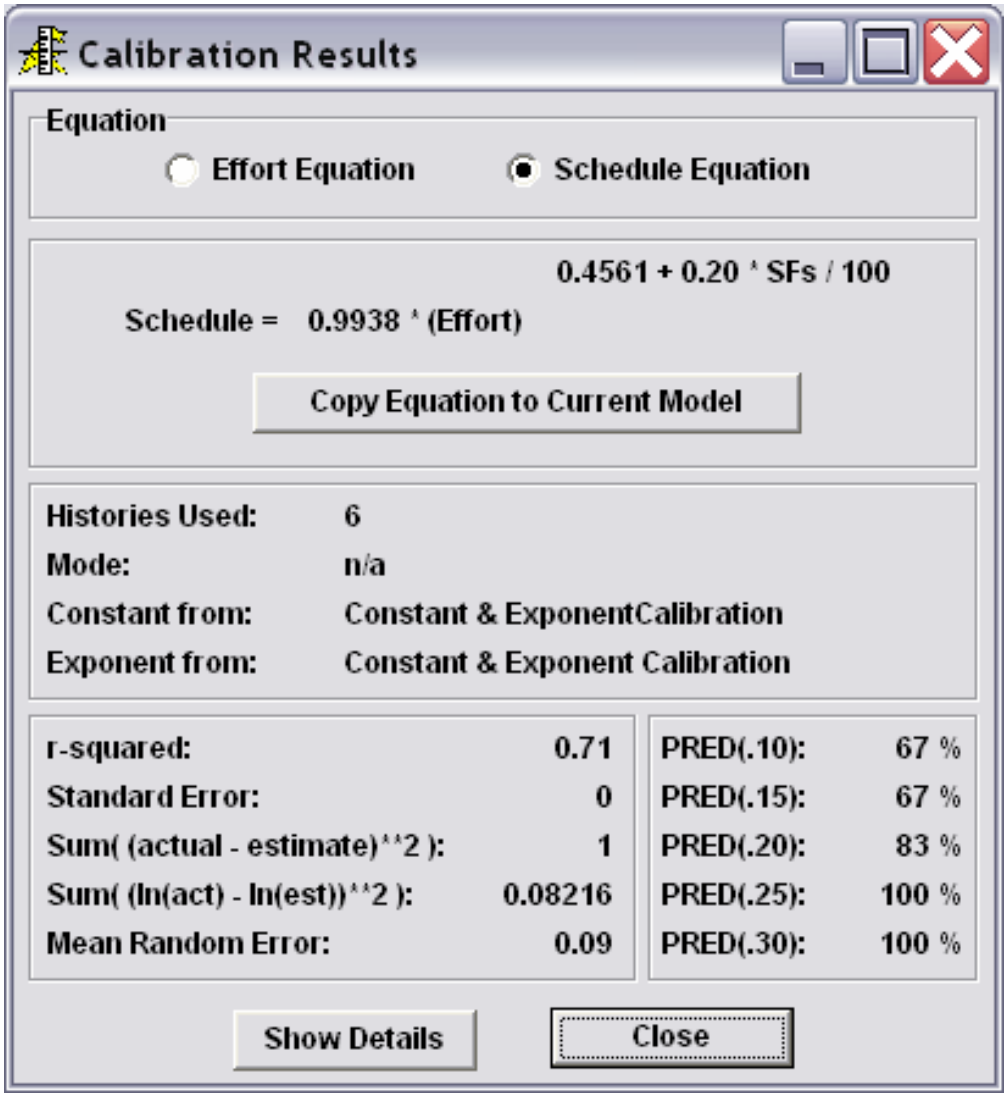
The COCOMO II Model
Global Electronics Manufacturer - 6 projects

- The organization needed an estimation process.
- All projects used VB or ASP technology.
- All projects were very short - 2 to 4 months.
- 6 similar completed projects were available.
- COCOMO II was calibrated to the 6 projects.
- The free CALICO tool was used in the calibration. (http://www.softstarsystems.com)

The COCOMO II Model
Global Electronics Manufacturer - 6 projects



The COCOMO II Model
Global Electronics Manufacturer - 6 projects



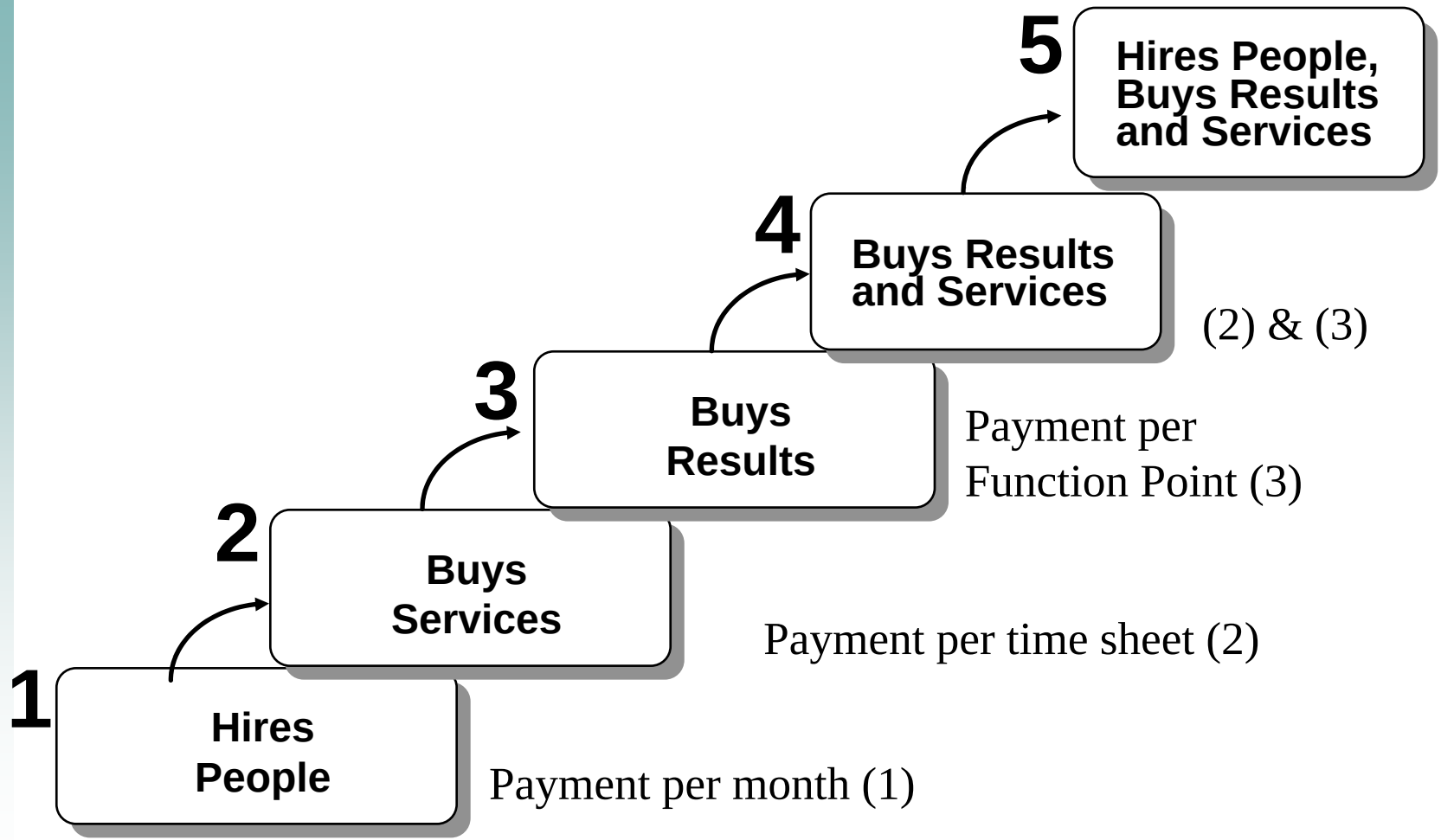
The COCOMO II Model
Summary

- All 3 organizations CMM L1
- Mean Error varied widely among organizations
- Variation may be reduced through software process standardization

Organization	N	Effort MRE	Sch MRE	Effort PRED(.30)	Sch PRED(.30)
Gov Bank	6	9%	13%	100%	83%
Gov Serv	16	30%	16%	56%	94%
Glob Electr M	6	18%	9%	83%	100%

Function Points in Contracts

A Maturity Model



The Productivity Approach
What is Productivity?

- Effort to develop a Function Point - consider the development life cycle as a whole
  - **Will vary with project characteristics**
    - Project size
    - Team experience
    - Team capability
    - Platform difficulty
    - Personnel turnover
    - Application complexity
    - Etc.
- Examples: 4 Hours per Function Point (4 H/FP), 10 H/FP, 15 H/FP, 30 H/FP, etc.

The Productivity Approach
Basic Equation

Development Price =

Function Points X

Productivity X

Average Unit Price of Work-Hour

= FP x PROD x UP

FP in Function Points,

PROD in Hours/FP

UP in $/Hour

The Productivity Approach
Project Phases

- Effort may be broken down by project phase.
- Some will break down FP's by phase.
- Phase percentages should be derived from historical data.

The Productivity Approach
Some Productivity Data

Language Type	Projects	Median
2GL	17	17.4
3GL	1007	11.9
4GL	504	6.8
APG	89	7.2
	1617	

Source: ISBSG Version 8 - H/FP (adjusted)

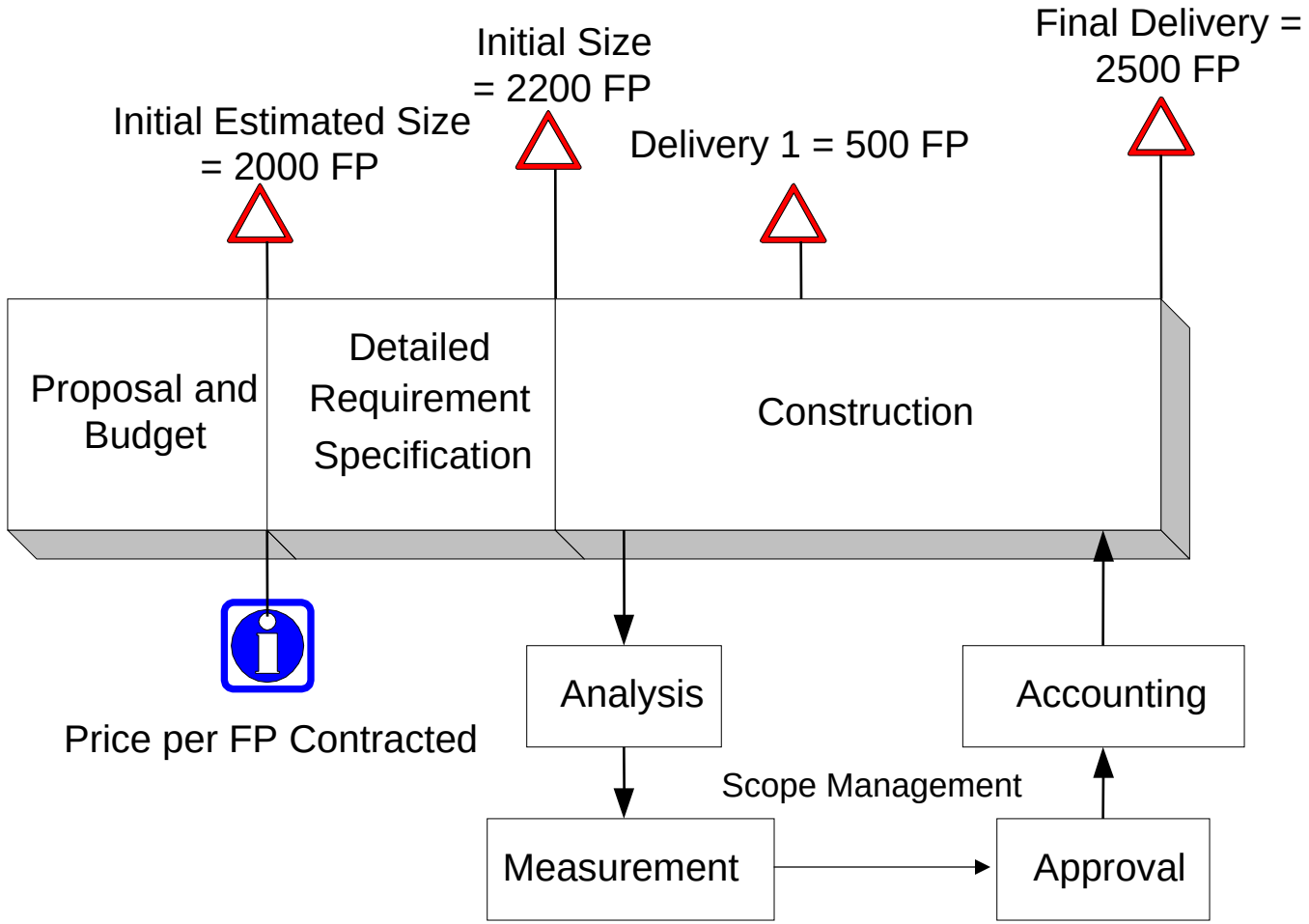
Some Brazilian Data (Hr / Adj FP)

2 Brazilian Banks (average)	20.27
2 Brazilian Service Organizations (average)	4.67

The Price per FP Approach

- Price per Function Point
  - **Based on functionality requested and delivered to the client**
  - **Based on a measure of the accomplished results**
  - **Price per FP will vary with project characteristics that may impact productivity**
  - **Both parties should be open to contract changes based on measurements made along the contract**

Scope Management



Total Delivered = 2500 FP

Total Changes = 800 FP

Cases

- Telecommunications Company (Long Distance - Total assets US$ 1.6 billion)
  - **Requirements analysts (developers) do all FP counting**
  - **“Metrics Office” - 3 people (1 CFPS)**
    - Tailor development methodology to support FPA
    - Train developers in FP counting
    - Validate FP counts done by developers
    - Referees FP discussion between client and suppliers
  - **1 year was required to make all changes and train approximately 70 requirements analysts**

Cases

- Government Bank (over 3,000 branches - over US$ 45 billion in assets)
  - **Developers do most FP counting**
  - **“Project Office” - approximately 15 people, 6 FP counters, 4 CFPS**
    - Tailor development methodology to support FPA
    - Train developers in FP counting
    - Validate FP counts done by developers
    - Referees FP discussion between client and suppliers
    - Do some counting
    - Project Office also does SEPG work
  - **Approximately 400 developers supported**

Thank You!

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